Tribhuvan University

Institute of Science and Technology

2079

✡

Bachelor Level/Second Year/Fourth Semester/Science — Full Marks: 60

Bachelors in Information Technology (BIT 254) — Pass Marks: 24

(Network and Data Communications) — Time: 3 Hours

Candidates are required to give their answers in their own words as for as practicable.

The figures in the margin indicate full marks.

Section A

Long Answer Questions

Attempt any TWO questions. **[2x10=20]**

1. Explain the concept of Binary Amplitude Shift Keying. Represent bit sequence 110010110 by the following waveform [6+4]
   a. Manchester
   b. Differential Manchester
2. Explain the design of Stop-and-Wait ARQ. Illustrate it with suitable flow diagram example. [10]
3. What are the features of link State routing protocols. Explain how Link State routing protocol can be used to find the shortest path with relevant example. What are its disadvantages. [2+6+2]

Section B

Short Answer Questions

Attempt any EIGHT questions. **[8x5=40]**

4. Differentiate between switch, router, and hub. [5]
5. What are the major differences between noise, distortion and attenuation? [5]
6. A slotted ALOHA network transmits 200-bit frames using a shared channel with a 200-kbps bandwidth. Find the throughput if the system considering all stations together produces 250 frames per second. What do you mean by vulnerable time of slotted ALOHA? [4+1]
7. Why do we use NAT? Explain its different types. [3+2]

8. Describe Quality of Service. What are its practical significances? [4+1]
9. What is FTP and how does it work? [2+3]
10. Explain Time Division Multiplexing with required figure. [5]
11. What is MAC-address? The message sequence is 1101011011 and generator polynomial $G(X) = x^4+x+1$. Calculate the transmitted encoded frame. [2+3]
12. Write short notes on: [2x2.5=5]
    a. Open-loop
    b. POP.